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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,733

02/11/2005

Robert Crombach

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23117 7590 05/21/2007  
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EXAMINER

LISTVOYB, GREGORY

ART UNIT

PAPER NUMBER

1711

MAIL DATE

DELIVERY MODE

05/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/501,733

Applicant(s)

CROMBACH ET AL.

Examiner

Gregory Listvoyb

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/16/2004</u> . | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Response to Amendment*

Applicant's argument filed 3/15/2007 fully considered but they are not persuasive.

Applicant stated that "In this regard, applicants note that the references cited by the Examiner, including Berger et al, all relate to a single post-condensation step and a cooling step. Thus, the cited documents do not describe at all a post condensation process comprising a first condensation step which at the end of which the polyamide polymer has an intermediate-viscosity corresponding with a viscosity number  $VN_{int}$ , followed by a second post-condensation step at the end of which the polyamide polymer has an end-viscosity corresponding with a viscosity number  $VN_{end}$ , whereby  $VN_{int}$  is at most 90% of  $VN_{end}$ , measured according to ISO 307".

However, Claim 1 of the Application discloses a process where wetness of Nitrogen has been varied at elevated temperature. Therefore, fluctuation of temperature during the process is not determined. The definition of "elevated" temperature can include any temperature above an ambient one. Since Berger performs his postpolycondensation at temperature above the ambient one, his entire process takes place at elevated temperature (see Fig. 2). Thus, with any temperature fluctuations above ambient temperature Berger's reference meets limitations of Claim 1.

According to the Claim 1 as it written, steps (a) and (b) of the Application determined by the time, when T Dew 1 and T Dew 2 are measured with only limitation that Dew 1 is

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higher than T Dew 2. In another words, any intermediate points can be taken to limit steps (a) and (b) if they meet the above limitation. Thus, entries 2 and 4 of Table (see Berger reference) can define steps (a) and (b) meeting the limitations of Claim 1.

Since Claim 1 has been amended, it can not be rejected with Dujari, Van Ruiten and Beaton under 35 U.S.C. 102(b).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-12 rejected under 35 U.S.C. 102(b) as being anticipated by Berger et al (WO 9724389 and US Patent 5859177), herein Berger.

Berger discloses a process for postcondensation of polycondensates, especially polyamide 6.6 granulate, in a fluidized bed reactor using nitrogen as the carrier gas.

On the first stage of the process Nitrogen gas is saturated with water at dew point about 80. The reaction temperature is within the range of 50-195 C (Figure 2). At the second stage of the process the dew point of Nitrogen stream decreases from 80C to 20C. At the same time, the reaction temperature decreases to 58C.

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Typical melting point of polyamide 6,6 is within the range of 250C-260C. Therefore, the limitations of Claims 3 and 8 are met.

Viscosity values of Polyamide 6,6 are between 75.6 and 91.5. Therefore, the limitations of Claims 10 and 12 are met (Column 4, Table).

Viscosity numbers may increase with lower dew point of Nitrogen (Table, tests 2 and 4), meeting the limitations of Claim 11.

Claims 1-3, 8 and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Dujari et al (WO 9823666 and US Patent 5955569), herein Dujari.

Dujari discloses a method for a solid state polymerization of polyamides. He teaches that the use of an ultra dry gas characterized by a dew point below 30C in combination with a phosphorus containing SPP catalyst leads to a markedly increased solid state polymerization rates at significantly lower reaction temperatures.

Dujari does not explicitly change the wetness of Nitrogen carrier gas. However, he teaches that the low dew point gas provides a driving force for diffusion of moisture from the interior to the surface of the polyamide pellets and evaporation of that water from the surface (column 3, line 1). Evaporation of water from the granules inevitably increases a wetness of a Nitrogen gas at the first stage of the process.

Dujari discloses that PA Mn values increase from 12.8 K to 14.5-25.1K, which corresponds with VN values increase on 10% (Example 1 and Table 1).

Dujari uses the pellets of low molecular weight poly(hexamethylene adipamide), nylon 6,6, polycaprolactam, nylon 6 with antioxidant (stabilizer) present (Figure 1, Column 4, line 10).

Claims 1-2, 8 and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Van Ruiten et al (WO 03006724, US patent 6911257), herein Van Ruiten.

Van Ruiten discloses a process for the manufacture of homopolyamide —4,6 fibers. He teaches the solid-state post condensation (SSPC) is performed in water containing gas atmosphere having a dew temperature at atmospheric pressure between 5C and 100C. At dew temperature above 5C less discoloration occurs. The dew temperature may be chosen such that the yellowness index is lower than 20. After SSPC in the presence of water vapor, drying at dry conditions may be performed to reduce the water content of the polyamide-4,6 (column 5, line 25). Therefore, at the second stage of the process (drying) the surrounding inert gas should be substantially dry. VN values increase from 160 ml/g to 196-270 ml/g (Column 7, line 25 and Table 1).

Claims 1-3 and 8 rejected under 35 U.S.C. 102(b) as being anticipated by Beaton (US patent 3821171), herein Beaton.

Beaton teaches a continuous, solid-phase polymerization process for increasing the molecular weight of polyamide (PA66, PA6, etc, Column 3, line 45) granules with an inert gas at an elevated temperature. Preferably, the inert gas is substantially free of moisture (Column 4, line 35). He suggests that it is cheaper to recirculate gas, but it's lead to a higher moisture content, decreasing the rate of the reaction (Column 4, line 40). Therefore, actual wetness of the inert gas increases at the first stage of the process and then decreases with reaction completion. VN values increase from 150 to 300 (Column3, line 55).

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory Listvoyb whose telephone number is (571) 272-6105. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Listvoyb  
Examiner  
Art Unit 1711

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James J. Seidleck  
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